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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/362,397	07/28/1999	EDUARD KUGLER	H60-056DIV	6818

7590 01/29/2002

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ART UNIT	PAPER NUMBER
1753	6

DATE MAILED: 01/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/362,397	Applicant(s) Kugler
	Examiner Rodney McDonald	Art Unit 1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on Nov 13, 2001 .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 91-149 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 91-149 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/593,664 .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11-13-01 has been entered.

Claim Rejections - 35 USC § 112

2. Claims 91-149 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 91, line 3, is indefinite because the phrase "may be applied" is unclear if it is part of the claim.

Claim 91, line 10, "a least" should be "at least".

Claim 92, line 3, is indefinite because the phrase "may be applied" is unclear if it is part of the claim.

Claim 104, line 4, is indefinite because the phrase "may be applied" is unclear if it is part of the claim.

Claim 105, line 5, is indefinite because the phrase "may be applied" is unclear if it is part of the claim.

Claim 107, line 3, is indefinite because the phrase "may be applied" is unclear if it is part of the claim.

Claim 107, line 18, is indefinite because "may be reduced" s unclear if it is part of the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 91 and 92 are rejected under 35 U.S.C. 102(b) as being anticipated by Tawara et al. (EP 0 473 492).

Tawara et al. teach an improvement in the stability and durability can be obtained in a magneto-optical recording medium having a multi-layered structure consisting of a transparent substrate plate, a first dielectric layer, a magnetic layer, a second dielectric layer and a reflecting layer by providing a protective coating film on the surface of the substrate plate opposite to the first dielectric layer with an inorganic substance selected from the group consisting of silicon nitride, silicon carbide, titanium dioxide, indium-tin oxide, silicon nitride containing hydrogen, silicon carbide containing hydrogen, silicon carbide nitride containing hydrogen, calcium fluoride and magnesium fluoride. (See Abstract)

The magneto-optical recording medium as the subject body of the inventive improvement has a multi-layered structure as is illustrated in Figure 1 by a cross section, in which a transparent

substrate plate 1 made from a poly carbonate resin, polyolefin resin, poly(methyl methacrylate) resin and the like is successively coated with a first transparent dielectric layer 2 of silicon nitride, silicon carbide, silicon nitride containing hydrogen, silicon carbide containing hydrogen, silicon carbide nitride containing hydrogen and the like having a thickness of 20 to 300 nm, a magnetic layer 3 of an amorphous ferrimagnetic alloy which is a combination of at least one rare earth element and at least one transition metal element in a thickness of 20 to 100 nm, a second dielectric layer 4 which can be made from the same substance and has about the same thickness as the first dielectric layer 2 and reflecting layer 5 made from a metal such as aluminum, copper gold, silver and the like having a thickness of 30 to 100 nm. (Column 2 lines 50-58; Column 3 lines 1-15)

According to the invention, a protective coating film 6 of a specific inorganic substance is formed on the surface of the substrate plate 1 opposite to the first dielectric layer 2 or, when the first dielectric layer 2 is omitted, to the magnetic layer 3 having a thickness of 10 to 2000 nm or, preferably, 20 to 300 nm. The inorganic substance forming the protective coating film 6 is selected from the group consisting of silicon nitride, silicon carbide, titanium dioxide, indium-tin oxide, silicon nitride containing hydrogen, silicon carbide containing hydrogen, silicon carbide nitride containing hydrogen, calcium fluoride and magnesium fluoride. The coating film of such an inorganic substance can be formed by the method of sputtering, chemical vapor deposition or vacuum vapor deposition well known in the art. (Column 3 lines 26-41)

A magneto-optical recording medium was prepared by successively forming, on one surface of a substrate plate of polycarbonate resin having a thickness of 1.2 mm, a first dielectric layer of hydrogen containing silicon carbide having a thickness of 110 nm as formed by the method of sputtering. (Column 4 lines 20-26)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 91 and 103-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara et al. (EP 0 473 492) in view of Kim (U.S. Pat. 5,240,581).

Tawara et al. is discussed above and teach depositing an intermediate layer of silicon nitride in recording medium. (See Tawara et al. discussed above)

The differences between Tawara et al. and the present claims is that deposition of the silicon nitride is not discussed.

Kim et al. teach formation of a silicon nitride layer by sputtering in a nitrogen atmosphere for a magneto-optical recording medium. (Kim et al. Column 4 lines 10-22)

The motivation for depositing a silicon nitride layer in recording medium is that it allows for use of a layer with consistent refractive index. (Column 1 lines 64-68; Column 2 lines 1-2)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Tawara et al. by forming a silicon nitride layer by sputtering in a nitrogen atmosphere as taught by Kim because it allows for using a layer with a consistent refractive index.

7. Claims 95, 98 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara in view of Kim as applied to claims 91 and 103-106 above, and further in view of Kugler (U.S. Pat. 5,292,417).

The differences not yet discussed is the use of AC superimposed over DC, feedback control and doping.

Kugler teach a method and apparatus for preforming the method comprising a vacuum treatment chamber containing a target of ohmic conductive material. The target and a workpiece are supported by suitable electrodes. Superimposed DC and AC power is applied to the target to generate a glow discharge in the chamber in which the target is sputtered. Particles sputtered off the target react with a reactive gas in the space between the target and workpiece and the reaction product is deposited upon the workpiece. (See Abstract)

It has been recognized that, principally, when reactive AC and DC sputtering a target of low electric conductivity, such as and especially as of Si, which is doped in order t o increase its conductivity, doping be phosphorus leads to a significantly lower tendency of arcing and splashing at a "poisoned" target. (Column 6 lines 63-68)

According to the schematic illustration, a negative feed back control circuit for stabilizing sputtering and coating process is provided. It includes an actual value sensing device 22, including one or several sensors of the following, optical sensor, absorption-emission-fluorescence spectrographic sensor, sensor for detecting light emission, plasma monitoring sensor, discharge impedance sensor, partial pressure sensor. (Column 12 lines 25-37)

The output signal of the actual value sensing device 22 is sent to a conditioning and evaluating unit 24, 26. After the signal has been conditioned, the actual value signal S is led to a difference measuring unit 28. Here the control difference relative to a preset rated value W is generated, which latter may be set by unit 30. (Column 12 lines 38-43)

The control difference acts via controllers (not illustrated) for optimizing the control of a process value, i.e. the regulated value, and which reacts speedily. Preferably one or several of the following physical values listed below are used as the regulated value and are set by respective regulating means: DC power, AC frequency, AC frequency, AC frequency spectrum, ratio of AC power/ DC power, mass flow of reactive gas, gas mixture, mass flow of process gas. (Column 12 lines 44-58)

The motivation for superimposing AC over DC, providing negative feedback control and providing a doped target is that it allows for production of high quality coatings. (Column 7 line 15)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have superimposed AC over DC during deposition, utilized negative

feedback control and dope the silicon target as taught by Kugler because it allows for production of high quality coatings.

8. Claims 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara in view of Kim and further in view of Kugler as applied to claims 91, 95, 98, 100 and 103-106 above, and further in view of Signer (EP 0 564 789).

The differences not yet discussed is applying a pulsating AC voltage and intermittently connecting the carrier to different voltage paths.

Signer et al. teach a method of treating a workpiece in a vacuum atmosphere in which ions are produced and driven against the at least partially insulated surface (4) of a workpiece (2b) and cause electrostatically charged surface, a short circuit between the partially insulated workpiece and the other conductive surface is intermittently produced to neutralise collected charge on the insulated layer. The neutralised ions remain accumulated on the surface and are suitable for ion plating. In sputter coating and etching processes. (See Abstract) The Figures demonstrate providing pulsing AC power and intermittently connecting the carrier to different voltage paths. (See Figures)

The motivation for utilizing a pulsating AC voltage and intermittently connecting the carrier to different voltage paths is that it avoids the need for expensive high frequency generators to be included in the circuit to neutralize the electrostatic charge. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art to have applied a pulsating AC voltage and intermittently connected the carrier to different voltage paths as taught by Signer et al. because it is desired to neutralize electrostatic charge.

9. Claims 92, 93 and 104-106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara et al. (EP 0 473 492) in view of Takurou et al. (JP-59003017) or IBM Tech. Disclosures Bulletin, Vol. 28, pg. 301.

Tawara et al. is discussed above and all is as applies above. (See Tawara et al. discussed above)

The differences between Tawara et al. and the present claims is that depositing the silicon carbide film or hydrogenated silicon carbide film is not discussed.

Takurou et al. teach the manufacture of a titled film whose electric characteristics can be controlled over a wide range by sputtering an Si target with a gaseous mixture prepared by adding gaseous H2 to gaseous Ar and gaseous C3H8 or CH4 so as to stabilize the operation. A substrate 2 for forming an a-SixC1-x:H film (amorphous silicon carbide film stabilized with hydrogen) and an Si target 3 as an Si source are placed opposite each other in a reaction chamber 1.. The chamber 1 is evacuated 4, and a gaseous mixture consisting of gaseous C3H8 or CH4 6 as c and H sources, gaseous Ar and Gaseous H2 8 is fed to the chamber 1 through a mixer 9. At the same time, high-frequency voltage is applied to the space among a coil 10 for a magnetic field placed around the chamber 1, the substrate 2 and the target 3 from a high-

frequency power source 11 to sputter the target 3 with said gaseous mixture. By the sputtering the a-SixC1-x:H film is formed on the substrate 2. (See Abstract)

The motivation for controlling the gas flows is so that a film of a-SixC1-x:H can be deposited. (See Takurou et al. discussed above)

IBM Tech. Disclosure Bulletin teach a process which is suitable for low temperature deposition of silicon carbide. The technique is reactive magnetron sputtering of silicon in a gas mixture containing argon and methane (or other carbon-containing gas). A planar magnetron sputter RF source is used since it provides high rate sputtering with minimum substrate heating. This allows the films to be deposited for example on poly (methyl methacrylate) (PMMA) substrate without any adverse effect on such plastic substrate. By controlling the partial pressure of methane (or other carbon containing gas), we are able to deposit films with different silicon-to-carbon ratio (as revealed by ESCA analysis) and wider range of hydrogen content,; i.e., amorphous thin films obtained can be well represented as a SiC:H. These films have similar properties (optical, structural) to those for the films prepared using other high temperature techniques. (See Abstract)

The motivation for controlling the gas is that it is desired to control the silicon-to-carbon ratio. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Tawara et al. By controlling the amount of C or H in the

SiC or SiCH film as taught by Takurou et al. or as taught by IBM Technical Disclosure Bulletin because it allows for controlling the composition of the film.

10. Claims 94, 95 and 98-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara et al. in view of Takurou et al. or IBM Technical Disclosure Bulletin as applied to claims 92, 93 and 104-106 above, and further in view of Kugler (U.S. Pat. 5,292,417).

The differences not yet discussed is the use of AC superimposed over DC, feedback control and doping.

Kugler is discussed above and teach AC superimposed over DC, feedback control and doping. (See Kugler discussed above)

The motivation for superimposing AC over DC, providing negative feedback control and providing a doped target is that it allows for production of high quality coatings. (Column 7 line 15)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have superimposed AC over DC, provided negative feedback control and provided a doped target as taught by Kugler because it allows for production of high quality coatings.

11. Claims 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara et al. in view of Takurou et al. or IBM Technical Disclosure Bulletin and further in view of Kugler as applied to claims 92-95, 98-100 and 104-106 above, and further in view of Signer (0 564 789).

The difference not yet discussed is applying a pulsating AC voltage and intermittently connecting the carrier to different voltage paths.

Signer is discussed above and teach applying a pulsating AC voltage and intermittently connecting the carrier to different voltage paths. (See Signer discussed above)

The motivation for utilizing a pulsating AC voltage and intermittently connecting the carrier to different voltage paths is that it avoids the need for expensive high frequency generators to be included in the circuit to neutralize the electrostatic charge. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a pulsating AC voltage and intermittently connecting the carrier to different voltage paths is that it avoids the need for expensive high frequency generators to be included in the circuit to neutralize the electrostatic charge as taught by Signer because it allows neutralizing electrostatic charge.

12. Claims 101 and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tawara et al. in view of Kim as applied to claims 91 and 103-106 above, and further in view of Takei et al. (Japan 59-73413).

The differences not yet discussed is the deposition of silicon nitride in ammonia.

Takei et al. teach a mixed gas of an inert gas such as Ar, etc. and a nitrogen-containing gas such as nitrogen gas or ammonia gas is introduced from the gas bomb 6 through the gas flow rate regulator 5 and the pipe 4 to the vacuum container 1 evacuated by the vacuum pump 2, and sputtering is carried out by irradiating the target 7 consisting of silicon or silicon nitride with ionic

beam from the ionic beam generator 3 set in the container 1. Consequently, the target is irradiated with nitrogen ion or an ion of nitrogen atom-containing gas, to form an insulating material of thin film consisting of substantially amorphous silicon nitride. (See Abstract)

The motivation for utilizing ammonia to sputter is that allows the formation of a film having denseness. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized ammonia as a reactive gas for sputtering as taught by Takei et al. because it allows for formation of a film having denseness.

13. Claims 107-120, 123-127, 130-132, 134, 148 and 149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino et al. (EP 0 658 885).

Imaino et al. teach in Fig. 2A a cross-sectional view of medium 12. Medium 12 has a substrate 50. Substrate 50 is also known as a face plate or cover plate and is where the laser beam enters medium 12. Face plate 50 and substrates 56, 62, 68 and 74 are made of a light transmissive material such as polycarbonate or other polymer material or glass. (Page 4 lines 3-14)

Fig. 2B is a cross-sectional view of an alternative embodiment of a highly transmissive optical recording medium and is designated by the general reference number 120. Elements 120 which are similar to elements of medium 12 are designated by a prime number. Medium 120 does not have the rims and spaces 78 of medium 12. Instead, a plurality of solid transparent members 122 separates the substrates. In a preferred embodiment, the members 122 are made of

a highly transmissive optical cement which also serves to hold the substrate together The thickness of members 122 is preferably approximately 10-500 microns. Medium 120 may be substituted for medium 12 in system 10. Medium 120 may also be made of different numbers of data surfaces by adding or subtracting substrates and transparent members. For example, a two-data surface medium comprises face plate 50', member 122 and substrate 56'. (Page 4 lines 35-44)

Fig. 3A shows a detailed cross-sectional view of a portion of disk 12 of Fig. 2A. Substrate 50 contains the embedded information in the data surface 90 and is covered by a thin film layer 124. Layer 124 is made of a material which exhibits low light absorption at or near the wavelength of a light used in the optical system. For light in the range of 400-850 nm in wavelength, materials such as semiconductors are used for layer 124. The thickness of thin film layer 124 is in the range of 25-5000 angstroms. Layer 124 is preferably spin coated onto surface 90. (Page 4 lines 45-50)

Fig. 3B shows a detailed cross-sectional view of a portion of the disk 120 of Fig. 2B. The layers 124' are deposited onto data surfaces 90' and 92', respectively. The member 122 separates the layers 124'. There is no need for a protective layer in this embodiment because member 122 serves as the protective layer. (Page 5 lines 5-8)

The thin film layers 124 are used to provide desired amounts of light reflectivity at each data surface. However, because there are multiple data surfaces through which the light passes the thin layers 124 must also be highly transmissive and absorb as little light as possible. These

conditions can be met when the index of refraction (n) is greater than the extinction coefficient (k) and particularly when the index of refraction (n) is relatively high (n> 1.5) and the extinction coefficient (k) is relatively low (k < 0.5). Such conditions occur in certain materials over certain frequency ranges. One region where these conditions can be met is on the high wavelength side of an anomalous dispersion absorption band. (Page 5 lines 9-15)

Amorphous silicon has been found to be a good material for use as layer 124 where light in the wavelength range of 400 - 850 nm is used. The thickness of thin film layer 124 is in the range 25-5000 Angstroms. (Page 5 lines 24-25)

Other semiconductor materials in addition to amorphous silicon may e used for layer 124. Any of group IVA elements from the periodic table may be used such as C, Si, Ge, Sn, Pb or combinations thereof. (Page 5 lines 30-31)

These semiconductor materials are deposited as layer 124 in a sputtering process. (Page 5 line 39)

The difference between Imaino and the present claims is that the optical thickness with respect to the wavelength of radiation is not discussed.

As to the optical thickness since a wavelength is given in the range of 400-850 nm an optical thickness can be calculated in the range of claims. (Page 5 lines 24-25)

The motivation for selecting the wavelength of light is that it allows for selecting the thickness of the layer. (Page 5 lines 24-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed an information carrier with a certain wavelength of light as taught by Imaino because it allows for selecting the optical thickness.

14. Claims 128 and 129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino as applied to claims 107-120, 123-127, 130-132, 134, 148 and 149 above, and further in view of Kugler (U.S. Pat. 5,292,417).

The differences not yet discussed is the use of AC superimposed over DC, feedback control and doping.

Kugler is discussed above and teach AC superimposed over DC, feedback control and doing. (See Kugler discussed above)

The motivation for superimposing AC over DC, providing negative feedback control and providing a doped target is that it allows for production of high quality coatings. (Column 7 line 15)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have superimposed AC over DC, provided negative feedback control and provided a doped target as taught by Kugler because it allows for production of high quality coatings.

15. Claims 133 and 135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino as applied to claims 107-120, 123-127, 130-132, 134, 148 and 149 above, and further in view of Kim (U.S. Pat. 5,240,581).

The difference not yet discussed is that deposition of the silicon nitride is not discussed.

Kim et al. teach formation of a silicon nitride layer by sputtering in a nitrogen atmosphere for a magneto-optical recording medium. (Kim et al. Column 4 lines 10-22)

The motivation for depositing a silicon nitride layer in recording medium is that it allows for use of a layer with consistent refractive index. (Column 1 lines 64-68; Column 2 lines 1-2)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a silicon nitride layer by sputtering in a nitrogen atmosphere as taught by Kim because it allows for using a layer with a consistent refractive index.

16. Claims 136-147 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino as applied to claims 107-120, 123-127, 130-132, 134, 148 and 149 above, and further in view of Tawara et al. (EP 0 473 492).

The differences not yet discussed is depositing the different kinds of dielectric layers is not discussed.

Tawara et al. is discussed above and teach depositing a dielectric layer with an inorganic substance selected from the group consisting of silicon nitride, silicon carbide, titanium dioxide, indium-tin oxide, silicon nitride containing hydrogen, silicon carbide containing hydrogen, silicon carbide nitride containing hydrogen, calcium fluoride and magnesium fluoride. (See Tawara et al. discussed above)

The motivation for utilizing the dielectric layers is that it allows for improvement in resistance to moisture and chemicals. (Column 1 lines 32-38)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have deposited different kinds of dielectric layers as taught by Tawara et al. because it allows for improvement in resistance to moisture and chemicals.

17. Claims 121 and 122 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaino as applied to claims 107-120, 123-127, 130-132, 134, 148 and 149 above, and further in view of Sproul et al. (U.S. Pat. 4,428,811).

The difference not yet discussed is where the dielectric layer is a zirconium nitride layer.

Sproul et al. teach depositing a zirconium nitride layer from targets of zirconium in a nitrogen atmosphere. (Column 8 lines 25-33)

The motivation for depositing a layer of zirconium nitride is that it allows for a protective hardness layer. (Column 8 lines 18-21)

Therefore, it would have been obvious to one of ordinary skill in the art to have deposited a zirconium nitride layer as taught by Sproul et al. because it allows for depositing a protective hardness layer.

REMARKS:

It is believed that the prior art taken in combination teaches the usefulness of the nitrogen compounds in the present invention.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney McDonald whose telephone number is (703) 308-3807. The examiner can normally be reached on Monday through Thursday from 8:00 to 5:00. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

RODNEY G. MCDONALD
PRIMARY EXAMINER

RM

January 23, 2002